

Applicant : Gordon G. Guay
Serial No. : 10/664,818
Filed : September 16, 2003
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Attorney's Docket No.: 08935-298001 / M-5032

Amendments to the Drawings:

The attached replacement sheet of drawings includes changes to Fig. 8 and replaces the original sheet including Fig. 8.

In Figure 8, the reference "Thermally Insulating Walls, 12b" was added.

Attachments following last page of this Amendment:

Replacement Sheet (1 pages)
Annotated Sheet Showing Change(s) (1 pages)

REMARKS

At the outset applicant thanks the examiner for the indication of Allowable Subject Matter of Claims 4 and 13 being objected to as being dependent upon a rejected base claim. The examiner indicating that: "The Hockaday reference teaches a fuel cartridge having at least a portion of the wall of the housing being comprised of a thermally conducting material but it does not expressly teach the remaining portions of the walls of the housing that are thermally insulating."

The examiner objected to the drawings as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: on page 13, line 29, thermally insulating walls "12b".

A proposed drawing correction and replacement sheet are included with this reply.

The examiner objected to the disclosure because of the following informalities: on page 7, line 10, the reference number "46b" should be changed to "48b."

Applicant has corrected the typographical error.

The examiner rejected claims 1-3, 5-12, and 14-15 rejected under 35 U.S.C. 102(a) (e) as being anticipated by Hockaday et al. (US 2002/0182459). The examiner stated:

Regarding claim 1-3, 11, and 15, the Hockaday reference teaches a container comprising a housing "7" containing and in direct contact with a liquid source of an oxidizable fuel having at least a portion of the wall of the housing being comprised of a thermally conductive material that is a metal coating; a fuel egress port "4" supported by the housing; and a surface area enhanced planar vaporization membrane "2" that is a polymer membrane made of silicon rubber residing in the container (See Figure 1, paragraph [0053] & [0066]).

Applicant's claims are allowable over Hockaday et al (US 2002/0182459). Claim 1 for instance recites a container that supplies a source of fuel to a direct methanol fuel cell. Hockaday '459 is directed to a different application, namely to supply hydrogen gas to a PEM (Proton Exchange Membrane) fuel cell.

Claim 1 includes the limitation of a housing... having at least a portion of a wall of the housing being comprised of a thermally conductive material ... and a surface area enhanced

planar vaporization membrane residing in the container. Hockaday '459 neither describes nor suggests these features.

Neither the construction nor the materials disclosed by Hockaday '459 to provide tank 7, depicted and describe in Figure 1 suggest a housing... having at least a portion of a wall of the housing being comprised of a thermally conductive material. The examiner argues that Hockaday '459 teaches: "... a housing "7" containing and in direct contact with a liquid source of an oxidizable fuel having at least a portion of the wall of the housing being comprised of a thermally conductive material that is a metal coating." Applicant disagrees.

Hockaday '459 describes materials for a tank "7." According to Hockaday '459:

[0037] The tank walls can be made of composite materials. Examples are fiberglass cloth and silicone rubber, where the fiberglass cloth gives mechanical strength and the silicone rubber has high diffusion rate properties. The mechanical and diffusion properties of the fuel tanks can be adjusted to reflect the blend of materials and components making up the fuel system. The tanks may also be made in layers. One option is to make the outer layer have the highest diffusion resistance and have a single fuel such as methanol, with the interior having rapid diffusion. This would give the fuel delivery a flat output with time, matching the vapor pressure of the fuel liquid, and then a steep decline as the remaining vapor diffuses out of the interior materials and voids.

The examiner however relies on Hockaday's '459 description of "metal coatings." The examiner does not give a reference for this teaching, and the only teaching that Applicant was able to find in Hockaday '459 that pertained to metal coatings was: "The storage container of the permeable fuel container needs to be impermeable to the fuel. This container could be a disposable bag with metal coatings or coatings such as Aclar® (Honeywell Specialty Films, PO Box 1039, 101 Columbia Road, Morristown, N.J. 07962) PVDF polyvinylidene fluoride plastic."

However this teaching is directed to the packaging of tank 7, not the tank 7 itself. Accordingly, claim 1 is allowable over Hockaday '459 because Hockaday '459 does not disclose all of the features of claim 1 arranged as in claim 1. Moreover, it would not be suggested to modify Hockaday '459 to incorporate the metal coatings since as tank 7 is contemplated in structure, design and use, it requires permeable walls, which would be hindered with a metal coating and in particular the metal coatings of the packaging that the examiner relies on.

Claim 1 also calls for: “a surface area enhanced planar vaporization membrane residing in the container and in thermal communication with the at least portion of the wall comprised of a thermally conductive material.” The examiner argues that separating membrane 2 disclosed in Hockaday ‘459 corresponds to this feature. While separating membrane 2 indeed may correspond to the “a surface area enhanced planar vaporization membrane,” which Applicant does not concede, and does resides in the tank, it is clear that there is not any basis from Hockaday ‘459 to arrange the surface area enhanced planar vaporization membrane in thermal communication with the portion of the wall comprised of the thermally conductive material.

Accordingly, claim 1 is allowable over Hockaday ‘459.

Claim 2, which recites that “the surface area enhanced planar vaporization membrane is a polymer membrane” and 3, which recites that “the at least a portion of a wall of the housing being comprised of a thermally conductive material is comprised of a metal” serve to further distinguish over Hockaday ‘459.

Claim 4, which recites that the “remaining portions of walls of the container are thermally insulating.” is not disclosed by the reference as acknowledged by the examiner. Hockaday ‘459 does not teach a structure in which some walls of the container are thermally insulating whereas other(s) are thermally conductive.

Claim 5, which recites that at least a portion of a wall of the housing being comprised of a thermally conductive material is a portion of the housing of the container disposed adjacent the fuel egress port of the container, is not disclosed by Hockaday ‘459. The egress port of Hockaday ‘459 has a filter, but no a thermally conductive material, as disclosed. The reference does not describe or suggest the desirability of using dissipated thermal energy from an operating device to increase vapor pressure.

Claims 6-9 serve to further distinguish over the reference.

Claim 10 serves to further distinguish, since Hockaday ‘459 neither describes nor suggests the desirability of a fuel cartridge, in which at least a portion of a wall of the housing is comprised of a thermally conductive material, enhances a delivery rate of methanol in a vapor phase across the membrane to deliver vapor at the egress port of the container. Hockaday ‘459

does not describe either the housing comprised of a thermally conductive material, or the function of the thermally conductive material to sink heat and enhance delivery rate of methanol.

Claim 11 is distinct over Hockaday '459 since the references neither describes nor suggests a fuel cartridge ... comprising a housing ... containing and in direct contact with a liquid source of an oxidizable fuel and having at least a portion of a wall of the housing being comprised of a thermally conductive material as discussed above.

Claim 13 distinguishes over Hockaday '459 since the reference neither describes nor suggests that remaining portions of walls of the cartridge are thermally insulating or as in claim 14, where the at least a portion of a wall of the housing being comprised of a thermally conductive material is a portion of the housing of the container disposed adjacent the fuel egress port of the cartridge.

The examiner rejected claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bourilkov et al (US 2004/0253500) in view of Hockaday et al (US 2002/0182459). The examiner stated:

The Bourilkov reference teaches a method of disposing a fuel cartridge "38" into compartment "14" of an electronic device "12" where the fuel cartridge is placed in thermal communication with a heat generating component "22" of the electronic device. However, the reference does not expressly teach a fuel cartridge containing methanol with a portion of the wall of the housing comprised of a thermally conductive material. The Hockaday reference teaches a fuel cartridge with the walls of the housing that is metal coated containing a source of fuel that is methanol. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Bourilkov electronic device to include a fuel cartridge with the walls of the housing that is metal coated containing a source of fuel that is methanol so that heat generating component of the electronic device increases the vapor pressure of the fuel in the housing to cause the fuel to egress from the cartridge as vapor in order to efficiently utilize the heat generated by the heat generating component of the electronic device.

Claim 16 distinguishes since no combination of the references suggests a method including disposing a fuel cartridge into a compartment of an electronic device such that a portion of a wall of a housing of the fuel cartridge that is comprised of a thermally conductive material is placed in thermal communication with a heat generating component in the electronic device to enable a vapor phase of the fuel in the housing to egress from the cartridge.

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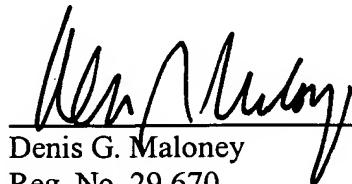
The examiner states that: "the [Bourilkov] reference does not expressly teach a fuel cartridge containing methanol with a portion of the wall of the housing comprised of a thermally conductive material." The examiner relies on Hockaday '459 to teach this feature arguing that "The Hockaday reference teaches a fuel cartridge with the walls of the housing that is metal coated containing a source of fuel that is methanol." Applicant disagrees.

While Bourilkov teaches a fuel cartridge and insertion into a compartment of an electronic device, the examiner's reliance on Hockaday '459 is misplaced, since Hockaday '459 fails to teach a fuel cartridge with the walls of the housing that are metal coated, as discussed above. Accordingly, it would not be obvious "to modify the fuel cartridge to include "a egress port that connects to an electronic device where a heat generating component increases the rate of fuel delivery in order to match the consumption rate of the fuel cell in the electronic device." as argued by the examiner since neither reference provides the necessary motivation to more effectively use the dissipated heat of the device to increase vaporization and any motivation on this basis would be an application of hindsight and thus would be inadequate.

No fee is believed due. If a fee is due, please apply that fee and any other charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: 9/1/06


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13/14

FIG. 8

